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DICKSTEIN SHAPIRO LLP		
1825 EYE STREET NW		
Washington, DC 20006-5403		

  

EXAMINER	
PALABRICA, RICARDO J	

  

ART UNIT	PAPER NUMBER
3663	

  

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/753,355

Applicant(s)

JESTICE, AARON L.

Examiner

Rick Palabrica

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 23-32, 34, 36-38 and 40-49 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 23-32, 34, 36-38 and 40-49 is/are rejected.
- 7) ☒ Claim(s) 36-38 and 40-42 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. Applicant's 6/19/07 Amendment, which directly amended claims 23, 24, and 26, canceled claims 33 and 35, added new claims 48 and 49, traversed the rejection of claims I the 3/19/07 Office action, amended the specification, and submitted replacement Figs. 1-6, is acknowledged.

### ***Response to Arguments***

2. Applicant argues that the amended claims define over the applied art, Gozani et al., and Grenier et al. on the ground that "it would not be obvious to adjust the intensity of the neutron source to the level recited by claim 23 because a lower intensity of neutrons makes it more difficult to detect explosives and controlled substances (specification, paragraph 0003) and simply lowering the intensity may render a detection system inoperable." Underlining provided. The examiner disagrees.

First, applicant's argument has no probative value because it is nothing more than a conclusory statement that is not supported by factual evidence. See MPEP 2164.05 that cites In re Buchner, 929 F.2d 660, 661, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991) ("expert's opinion on the ultimate legal conclusion must be supported by something more than a conclusory statement").

Second, applicant himself is not even sure that lowering the intensity of neutrons has a negative impact on the operation of devices in the applied art, as evidenced by

his statement, "may render a detection system inoperable." The term, "may", does not imply absolute certainty.

Third, the claims neither defines the size, shape and composition of the object to be inspected nor the quantity, strength, and specific placement of the explosives and controlled substances in the object. Clearly, the intensity of neutrons is a matter of design and/or optimization. It is a matter of design because said attributes of the object and substance of interest, as well as the required sensitivity of the inspection device, would determine the required neutron intensity for the inspection apparatus. It is also a matter of optimization because higher intensities would result, e.g., in shorter irradiation times but would result in more stringent shielding requirements to protect operating personnel, and a proper balance among competing factors have to be achieved.

3. Applicant argues that neither Gozani et al. nor Grenier et al. "teach detecting elements other than nitrogen" and therefore, "cannot teach using 'relative atomic percentages' as recited by claim 23." The examiner disagrees.

Gozani et al. detect not only nitrogen but also other elements, as stated in several parts of his disclosure, e.g.,

*"The particular details of a specific detector structure do not form a part of the present invention, but the specific use of an inorganic scintillator with good energy resolution and efficiency to detect gamma rays produced by thermal neutrons provides for a unique detection of nitrogen and/or other elements to form part of the present invention." Underlining provided. See sentence bridging cols. 6 and 7.*

*"It is to be appreciated that the inorganic scintillator may also be used to detect other elements representative of an explosive." See col. 7, lines 28+.*

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Additionally, the claims, e.g., claim 1 recites detection of concentration of a particular element, which is further evidence that it is not only nitrogen being detected by Gozani.

Grenier et al. disclose measuring the nitrogen/oxygen ratio of objects suspected of containing explosives (see Abstract). This ratio cannot be obtained unless both elements are measured.

4. Applicant argues that Tumer does not disclose “using a plurality of analytical tools to produce a plurality of analysis” and “subjecting the plurality of analysis to a hierarchy of classifiers.” The examiner disagrees.

Tumer discloses an embodiment wherein (see col. 8, lines 13+):

*“[T]he microprocessor analyzes the data taken from each detector array, comparing the signature of every object within the container to a user input list of harmful or potentially dangerous materials.”*

*“After a potentially dangerous material has been identified, the system can then be programmed to alert a system operator so that the operator can review the data...”*

Applicant has not defined the terms “analytical tools” and “classifiers”, and absent such definition, the examiner interprets these terms broadly. Applicants claim language reads on the above-cited embodiment of Tumer as follows: a) “plurality of analytical tools” reads on the microprocessor that first analyzes the data and then the operator who independently reviews the data and makes the final decision on the results; b) “hierarchy of classifiers” reads the user input list applied by the microprocessor and the criterion used by the human operator in making the final decision. Note that the claims do not preclude the analytical thinking and analysis performed by the brain of the human operator as being an analytical tool. Also, the human operator may consider

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several other factors other than the user input of harmful or dangerous materials, such as visual observation of the object that may show unusual and suspicious characteristics.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 24 and 49 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 24, as amended, recites, "analyzing the common eigen value signatures using a plurality of analytical tools to produce a plurality of analyses" and "subjecting the plurality of analyses to a hierarchy of classifiers."

There is neither an adequate description nor enabling disclosure as to: a) how and in what manner does one: i) select the appropriate analytical tools; ii) modify, where necessary, the selected analytical tools to fit applicant's situation; iii) determine how to combine the results from the plurality of analytical tools, e.g., what weight to assign to

the result of each tool when these results are combined to arrive at a composite result of all selected analytical tools, etc.

There is neither an adequate description nor enabling disclosure as to: a) what exactly are these so-called classifiers; b) how and in what manner does one: i) select the appropriate classifiers; ii) what, if any, modifications have to be made on the selected classifiers to apply to the claimed method; iii) determine which of the plurality of analysis to be subject to which classifier, iv) what particular sequence would the classifiers be applied to which analysis etc.

New claim 49 recites the limitation, “forming a correlation function of the signature data” (block S6 in Fig. 3) and “decomposing wavelets of the correlation function of the signature data” (block S7 in Fig. 3).

As presently set forth, blocks S6 and S7 in Fig. 3 are essentially “black boxes” with no description of the internals thereof. The disclosure is insufficient in failing to set forth in an adequate and sufficient fashion, a description of the specific elements contained within each of these blocks, which are critical to exercising the claimed invention. If the applicant is of the opinion that there is a description in the prior art (in the form of literature, etc. having a date prior to the filing date of this application) of the internals of this black box, copies of said literature, etc. must be submitted for appropriate review by the Office. See In re Ghiron et al., 169 USPQ 723, 727.

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6. Claims 24, 48 and 49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 24, the claim is vague, indefinite, and incomplete as to: a) what exactly are these so-called plurality of analytical tools; b) how and in what manner does one: i) select the appropriate analytical tools; ii) modify, where necessary, the selected analytical tools to fit applicant's situation; iii) determine how to combine the results from the plurality of analytical tools, e.g., what weight to assign to the result of each tool when these results are combined to arrive at a composite result of all selected analytical tools, etc. The metes and bounds of the claims are hence undefined.

As to claim 48, there is no proper antecedent basis in the claim for "the shielded apparatus."

As to claim 49, the claim is vague, indefinite, and incomplete, and its metes and bounds cannot be determined because there is no adequate description of the specific elements within blocks S6 and S7 in Fig. 3.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.



7. Claims 23, 36-38, 40-43, and 45 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Gozani et al. (U.S. 5,114,662), who disclose the applicant's claim limitations except for the source having an intensity of about  $10^7$  neutrons/second or less.

Section 8 of the 3/19/07 Office action discusses the claim limitations disclosed by Gozani et al., which discussion is herein incorporated. In sections 2 and 3 above, it further clarified how Gozani et al. meet the claim limitations, including why the source intensity of about  $10^7$  neutrons/second or less is a matter of design or optimization.

8. Claim 24 is rejected under 35 U.S.C. 103 (a) as being unpatentable over Tumer (U.S. 5,557,108).

The reasons are the same as those discussed in section 9 of the 3/19/07 Office action, as further clarified in section 4 above, which reasons are herein incorporated,

9. Claims 23, 25, 27-31, 34-38, 40-43, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over either one of Grenier et al. (U.S. 5,080,856) in view of Allyson et al. Grenier et al. disclose the applicant's claim limitations except for the plurality of neutron sources and the source having an intensity of about  $10^7$  neutrons/second or less.

Section 11 of the 3/19/07 Office action discusses the claim limitations disclosed by the combination of Grenier et al. and Allyson et al., which discussion is herein incorporated. Sections 2 and 3 above provide further clarification showing how Grenier

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et al.-Allyson et al. meet the claim limitations, including why the source intensity of about  $10^7$  neutrons/second or less is a matter of design or optimization.

10. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Grenier et al. and Allyson et al., who teach use of 14.7 MeV neutrons (see col. 3, lines 18+ in Grenier et al.). See also section 12 of the 3/19/07 Office action.

11. Claims 32, 34 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of Gozani et al. or the combination of Grenier et al. and Allyson et al. or Allyson et al.

The reasons are the same as those provided in section 13 of the 3/19/07 Office action, as further clarified in sections 2 and 3 above.

12. Claims 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one Gozani et al. or the combination of Grenier et al. and Allyson, or Allyson et al., in view of Vourvopoulos et al. (U.S. 6,563,898).

The reasons are the same as those provided in section 14 of the 3/19/07 Office action, as further clarified in sections 2 and 3 above.

13. Claim 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gozani et al. or the combination of Grenier et al. and Allyson et al.

The dimensions of the apparatus is matter of design and/or optimization within prior art conditions. See discussion in section 2 above.

14. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gozani et al. or Tumer or the combination of Grenier et al. and Allyson et al., in view of Sherlock (Pentagon Report A669104). Any one of primary references discloses the applicant's claim limitations except for the wavelet analysis of the detector signals.

Sherlock teaches that it is old and advantageous to apply wavelet analysis for processing of data from minefield detection systems, and the application of said technique to the detector signals in the system of any one Gozani et al. or Tumer or the combination of Grenier et al. and Allyson et al., would have been obvious to an artisan at the time of the claimed invention.

### ***Claim Objections***

15. Claims 36-38 and 40-42 objected to because they are recited as dependent from canceled claim 35. The examiner assumes in the above sections that the applicant intended these claims to depend from claim 34 instead.

### ***Conclusion***

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 571-272-6880. The examiner can normally be reached on 6:00-4:30, Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RJP

July 25, 2007



**RICARDO J. PALABRICA**  
PRIMARY EXAMINER

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave Blank)	2. REPORT DATE May 21, 2002	3. REPORT TYPE AND DATES COVERED Final, December 1 1998 to February 28 2002		
4. TITLE AND SUBTITLE Wavelet Based Feature Extraction for Target Recognition and Minefield Detection		5. FUNDING NUMBERS Grant No: N00014-99-1-0091 PR Number: 99PR01390-00 P.O. Code: 311		
6. AUTHORS Barry G. Sherlock		Disbursing Code: N68892 AGO Code: N66020 CAGE Code: 4B857 CFDA No: 12.300		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) University of North Carolina at Charlotte 9201 University City Boulevard Charlotte, NC 28223		8. PERFORMING ORGANIZATION REPORT NUMBER 2975-99-0106 FINAL		
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Dr. Wendy L. Martinez, ONR 311, Office of Naval Research, Ballston Center Tower One, 800 North Quincy Street, Arlington, VA 22217-5660		10. SPONSORING / MONITORING AGENCY REPORT NUMBER		
11. SUPPLEMENTARY NOTES None				
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13. ABSTRACT (Maximum 200 words) This project produced advances in the theory of wavelets and two-channel filter banks, and the development of new algorithms for the generation of wavelet filters and the wavelet based processing of image data, with a view towards their usefulness in image analysis for target recognition. These results include implementation of simulated annealing and Discrete Wavelet Transform algorithms, derivation of parameterizations for various useful spaces of wavelets, derivation of expressions for frequency and spatial uncertainty in wavelets, generation of wavelets optimized for different balances between spatial and frequency uncertainties, and development of wavelet transform domain denoising algorithms for feature detection algorithms.  Much of the research was done on-site at the Naval Surface Warfare Center, Dahlgren, VA. Several collaborations were formed with NSWC scientists, and these produced accomplishments in addition to those in the grant proposal. Also, the P.I. presented tutorial courses and seminars to NSWC personnel. Some of the research was performed during visits to universities in South Africa, resulting in further useful and on-going collaborations.  The grant supported a total of 6 graduate students (one Doctoral and 5 Masters) who performed software development and some theoretical derivations. During the period of the grant, 13 peer-reviewed papers were published (3 in journals and 10 at conferences).				
14. SUBJECT TERMS Target Recognition; Wavelets; Filter Banks; Stochastic optimization; Simulated Annealing; Discrete Transforms			15. NUMBER OF PAGES 6	
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